Recursive Partitioning Methods and Greedy Partitioning Methods: A Comparison on Finite Element Graphs

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Abstract. The partitioning problem of a graph $G = (V, E)$ consists of dividing the node set V into p subsets in order to minimize the number of intersubset edges in the case of an edge-partitioning or the number of interface nodes in the case of a vertex-partitioning. In either cases the partitioning problem is NP-complete. Consequently, many studies have been devoted to design heuristic methods to approximate the problem for general graphs or even for particular graphs. In this report, we survey different heuristics which address the edge-partitioning problem for finite element graphs. The existing heuristics for these particular graphs can be organized into two main classes: the recursive methods and the greedy methods. We also present a comparison study between various software packages performed on well-known finite element graphs.

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